

Section 18: Sine and Cosine Series

Solution of a Differential Equation An undamped spring mass system has a mass of 2 kg attached to a spring with spring constant 128 N/m. The mass is driven by an external force $f(t) = 2t$ for $-1 < t < 1$ that is 2-periodic so that $f(t + 2) = f(t)$ for all $t > 0$. Determine a particular solution x_p for the displacement for $t > 0$.

If the mass starts from rest at equilibrium, determine the displacement $x(t)$ for $t > 0$.

